CLAIMS

What is claimed is:

1. A power control unit for an aircraft, the aircraft to include a control surface and a command path, the power control unit comprising:

an override mechanism adapted to be coupled to the control path;

a first control member coupled to the override mechanism whereby the override mechanism to attempt to transmit a command from the command path to the first control member;

a second control member coupled to the control path whereby the command path transmits the command to the second control member;

a first and a second actuator member coupled to the first and the second control members respectively, whereby the first and second actuator members to attempt to move in response to the command, the override mechanism to allow the second control member to allow the second actuator member to move if the first control member resists moving in response to the command;

an actuator coupled to the first and the second actuator members and adapted to be coupled to the control surface, whereby the actuator to move the control surface in response to the command; and

a unitary housing containing the first and the second actuator members.

2. The power control unit according to claim 1, the aircraft further including a first and a second pressurized fluid source, further comprising:

a first delta pressure sensor in fluid communication with the first actuator member which includes a first piston in fluid communication with the first pressurized fluid source;

a second delta pressure sensor in fluid communication with the second actuator member which includes a second piston in fluid communication with the second pressurized fluid source; and

an output indicative of the difference between the delta pressures sensed by the first and the second delta pressure sensors.

3. The power control unit according to claim 2, further comprising:

a load relief valve in fluid communication with the first actuator member and adapted to control a restricted fluid communication path between the sides of the first actuator member.

4. The power control unit according to claim 1, the aircraft further including a first and a second pressurized fluid source, further comprising:

the first and second actuator members including a first and a second piston respectively, the first and second pistons in fluid communication with the first and second pressurized fluid sources respectively; and

an orifice in fluid communication with the sides of the first piston, whereby the orifice to bleed pressurized fluid across the piston to alleviate force fight between the actuator members and to provide damping.

5. The power control unit according to claim 1, the control surface to be a rudder.

6. The power control unit according to claim 1, the override mechanism further including a spring which changes length if the first actuator member resists moving in response to the command, whereby the override mechanism to allow the second actuator member to move.

7. An aircraft comprising:

a control surface;

a command path; and

a power control unit including an override mechanism adapted to be coupled to the control path;

a first control member coupled to the override mechanism whereby the override mechanism to attempt to transmit a command from the command path to the first control member;

a second control member coupled to the control path whereby the command path transmits the command to the second control member;

a first and a second actuator member coupled to the first and the second control members respectively, whereby the first and second actuator members to attempt to move in response to the command, the override mechanism to allow the second actuator member to move if the first control member resists moving in response to the command;

an actuator coupled to the first and the second actuator members and adapted to be coupled to the control surface, whereby the actuator to move the control surface in response to the command; and

a unitary housing containing the first and the second actuator members.

8. The aircraft according to claim 7, further comprising:

a first and a second pressurized fluid source;

a first delta pressure sensor in fluid communication with the first actuator member which includes a first piston in fluid communication with the first pressurized fluid source;

a second delta pressure sensor in fluid communication with the second actuator member which includes a second piston in fluid communication with the second pressurized fluid source; and

an output indicative of the difference between the delta pressures sensed by the first and the second delta pressure sensors.

9. The aircraft according to claim 8 further comprising the signal to control a standby actuator coupled to the control surface.

10. The aircraft according to claim 8, further comprising a load relief valve in fluid communication with the first actuator member and adapted to control a restricted fluid communication path between the sides of the first actuator member.

11. The aircraft according to claim 7, further comprising the control surface to be a rudder.

12. The aircraft according to claim 7, further comprising:

a first and a second pressurized fluid source;

the first and second actuator members including a first and a second piston respectively, the first and second pistons in fluid communication with the first and second pressurized fluid sources respectively; and

an orifice in fluid communication with the sides of the first piston, whereby the orifice to bleed pressurized fluid across the piston to allow the first piston to be in a different position than the second piston.

13. A method of controlling an aircraft, the aircraft to include a control surface, a command path, and a first and a second pressurized fluid source, the method comprising:

attempting to move a first actuator member with the first pressurized fluid source in response to a command from the command path;

attempting to move a second actuator member with the second pressurized fluid source in response to a command from the command path, the first and second actuator members in a unitary housing;

moving the control surface if either attempt is successful.

14. The method according to claim 13, further comprising:

sensing a first delta pressure sensor in fluid communication with the first actuator member;

sensing a second delta pressure sensor in fluid communication with the second actuator member;

comparing the first and the second delta pressures; and

generating a signal indicative of the difference between the delta pressures.

15. The method according to claim 14, further comprising controlling a standby actuator with the signal.

16. The method according to claim 13, further comprising controlling a restricted fluid communication path between the sides of the first actuator member whereby the fluid pressure across the first actuator member is reduced.

17. The method according to claim 13, wherein the control surface is a rudder.

18. The method according to claim 13, further comprising overriding a jam in the first command linkage.

19. A method for controlling a control surface of an aircraft, wherein the aircraft includes a command path and first and second pressurized fluid sources, the method comprising:

attempting to control the control surface by using a first actuator member, wherein the first actuator member is responsive to said first pressurized fluid source and is moved in response to a command from said command path;

simultaneously attempting to control the control surface by using a second actuator member, wherein said second actuator member is responsive to said second pressurized fluid source, is moved in response to a command from said command path, and is contained in a unitary housing with the first actuator member,

controlling the control surface if either attempt is successful, the first and the second actuator members contained in a unitary housing and coupled to an actuator which is coupled to the control surface to move the control surface.

20. The method according to claim 19, further comprising:

sensing a first delta pressure across the first actuator member;

sensing a second delta pressure across the second actuator member; and

comparing the first and the second delta pressures to determine if either attempt failed.

21. A method for redundantly controlling a control surface of a mobile platform, comprising:

using a first pressurized fluid source to actuate a first actuator member which is coupled to a common actuator coupled to the control surface;

using said first actuator member to attempt to control said control surface;

if control of said control surface cannot be accomplished via said first actuator member, then:

using a second pressurized fluid source to actuate a second actuator member which is coupled to the common actuator, the second actuator member contained within a unitary housing with the first actuator member; and

using said second actuator member to attempt to control said control surface.

22. The method according to claim 21, further comprising:

sensing a first delta pressure across the first actuator member;

sensing a second delta pressure across the second actuator member; and

comparing the first and the second delta pressures to determine if a failure associated with either actuator member failed.